INTERNET OF THINGS

Communities Deploy Projects by Combining Federal Support with Other Funds and Expertise

Why GAO Did This Study

Communities are increasingly deploying IoT devices generally with a goal of improving livability, management, service delivery, or competitiveness. GAO was asked to examine federal support for IoT and the use of IoT in communities. This report describes: (1) the kinds of efforts that selected federal agencies have undertaken to support IoT in communities and (2) how selected communities are using federal funds to deploy IoT projects.

GAO reviewed documents and interviewed officials from 11 federal agencies identified as having a key role in supporting IoT in communities, including agencies that support research or community IoT efforts or that have direct authority over IoT issues. GAO interviewed a non-generalizeable sample of representatives from multiple stakeholder groups in four communities, selected to include a range of community sizes and locations and communities with projects that used federal support. GAO also reviewed relevant literature since 2013 and discussed federal efforts and community challenges with 11 stakeholders from academia and the private sector, selected to reflect a range of perspectives on IoT issues.

GAO requested comments on a draft of this product from 11 federal agencies. Five agencies provided technical comments, which GAO incorporated as appropriate. Six agencies did not provide comments.
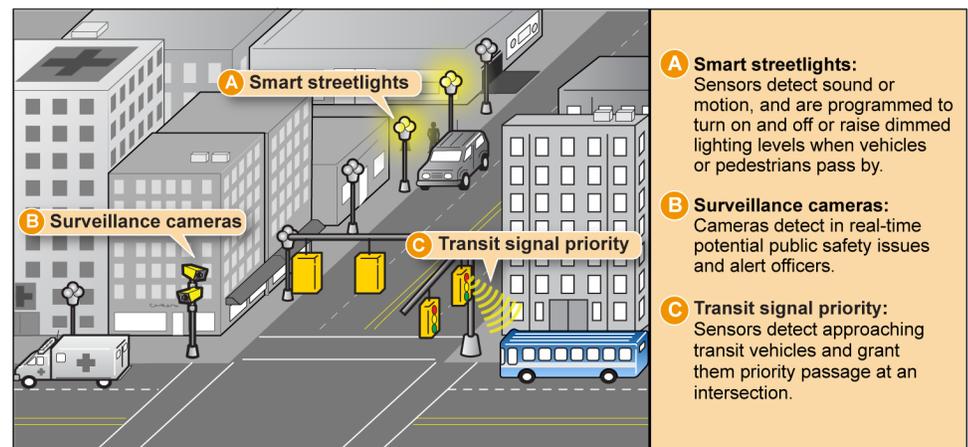
What GAO Found

The internet of things (IoT) generally refers to the technologies and devices that allow for the network connection and interaction of a wide array of devices, or "things." Federal agencies that GAO reviewed are undertaking two kinds of efforts that support IoT in communities:

- *Broad federal research and oversight of IoT-related technologies and issues:* For example, 8 of the 11 agencies GAO reviewed are involved in broad research efforts, often on communication systems—both wired and wireless network systems. In addition, nine agencies have oversight efforts that include providing IoT-related guidance, often on data security and privacy.

- *More direct efforts to support communities, including funding community IoT projects (see figure) and fostering collaboration among the agencies and communities:* For example, DOT recently awarded $40 million in federal funds to a community for a suite of "smart" projects related to improving surface transportation performance, and EPA awarded $40,000 each to two communities to develop strategies for deploying air quality sensors and managing the data collected from them. To foster such collaboration, in July 2016, the White House formed an interagency task force that has developed a draft *Smart Cities and Communities Federal Strategic Plan*. A final plan will be released in summer of 2017, according to federal officials.

All four of the communities that GAO reviewed are using federal funds in combination with other resources, both financial and non-financial, to plan and deploy IoT projects. For example, one community used the $40 million DOT award to leverage, from community partners, more than $100 million in additional direct and in-kind contributions, such as research or equipment contributions. Communities discussed four main challenges to deploying IoT, including community sectors (e.g., transportation, energy, and public safety) that are siloed and proprietary systems that are not interoperable with one another.

Examples of Internet of Things Projects in Communities

A **Smart streetlights:** Sensors detect sound or motion, and are programmed to turn on and off or raise dimmed lighting levels when vehicles or pedestrians pass by.

B **Surveillance cameras:** Cameras detect in real-time potential public safety issues and alert officers.

C **Transit signal priority:** Sensors detect approaching transit vehicles and grant them priority passage at an intersection.

Source: GAO analysis of federal agency and industry information. | GAO-17-570

_____ **United States Government Accountability Office**